

State of California  
The Natural Resources Agency  
Department of Water Resources

# California Water Plan

## Update 2013

*Investing in Innovation and Infrastructure*

**Volume 3 — Resource Management Strategies**

**PUBLIC REVIEW DRAFT**

October 2013

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**John Laird**  
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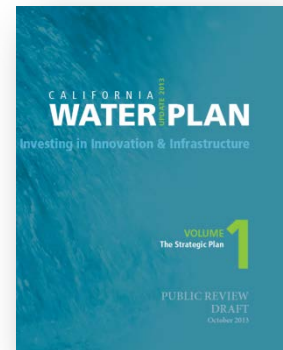
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## Navigating Water Plan Update 2013

*California Water Plan Update 2013* (Update 2013) provides a wide range of information, from a detailed description of California’s current and potential future conditions to a “Roadmap For Action” intended to achieve desired benefits and outcomes. Update 2013 applies at statewide, regional, and local scales, and serves to advise a diverse audience, including elected officials, planners and resource managers, tribal governments and communities, academia, and the general public. The plan is organized in five volumes. Volumes 1, 2, and 3 are outlined below. The *Highlights* booklet, Volume 4, *Reference Guide*, and Volume 5, *Technical Guide*, will be released with the Final Update 2013 document in March 2014.

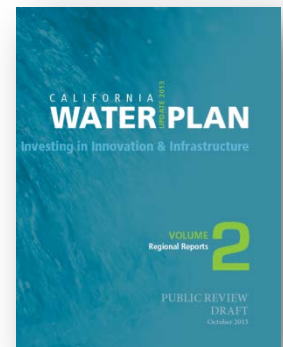
### *Volume 1, The Strategic Plan*

- Executive summary.
- Call to action, new features for Update 2013, progress toward implementation.
- Update 2013 themes.
- Comprehensive picture of current water, flood and environmental conditions.
- Strengthening government alignment and water governance.
- Planning (data, analysis and public outreach) in the face of uncertainty.
- Framework for financing the California Water Plan.
- Roadmap for Action – Vision, mission, goals, principles, objectives & actions.



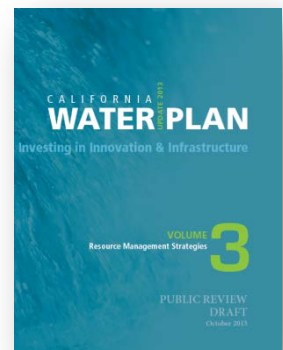
### *Volume 2, Regional Reports*

- State of the region — watersheds, groundwater aquifers, ecosystems floods, climate, demographics, land use, water supplies and uses, governance.
- Current relationships with other regions and states.
- Accomplishments and challenges.
- Looking to the future — future water demands, resource management strategies, climate change adaptation.



### *Volume 3, Resource Management Strategies*

- Integrated Water Management Toolbox  
30+ management strategies to:
- Reduce water demand.
  - Increase water supply.
  - Improve water quality.
  - Practice resource stewardship.
  - Improve flood management.
  - People & water.



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This front matter (of the public review draft) is a placeholder. The final *California Water Plan Update 2013* will show the complete list of those whose invaluable work and participation made possible this California Water Plan update.

Developing the water plan requires the knowledge, work, expertise, research, and technical advice of scores of individuals and groups — governmental, private, and nonprofit — representing multiple disciplines and many State agencies; federal, tribal, regional, and local interests; and environmental, agricultural, and urban concerns.

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## Acronyms and Abbreviations

20x2020 Plan	20x2020 Water Conservation Plan
AB 32	Assembly Bill 32, California Global Warming Solutions Act
ACWA	Association of California Water Agencies
ACWD	Alameda County Water District
af	acre-feet
af/yr	acre-feet per year
AFRP	Anadromous Fish Restoration Program
AGR	agricultural production
AMI	advanced metering infrastructure
APG	Climate Change Adaptation Policy Guide
APS	Alternative Planning Strategy
ARB	California Air Resources Board
ARRA	American Recovery and Reinvestment Act of 2009
ASC	agricultural stakeholders committee
AWMC	Agricultural Water Management Council
AWMP Act	Agricultural Water Management Planning Act
AWMP	agricultural water management plan
AWS	automatic water softeners
AWUF	agronomic water use fraction
AWWA	American Water Works Association
BAER	Burned Area Emergency Response
BCDC	San Francisco Bay Conservation and Development Commission
BDCP	Bay Delta Conservation Plan
BLM	U.S. Bureau of Land Management
BMOs	basin management objectives
BMPs	best management practices
BOF	California State Board of Forestry
C2VSIM	California Central Valley Groundwater-Surface Water Model
Cal BOATING	California Department of Boating and Waterways
Cal EMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CAL LCC	Landscape Conservation Cooperative
CAL POLY	California Polytechnic State University, San Luis Obispo
CALAFCO	California Association of Local Agency Formation Commissions
CALFED	CALFED Bay-Delta Program
CALGreen	California Green Building Code
California State Parks	California Department of Parks and Recreation
CalWARN	California Water/Wastewater Agency Response Network
CAMAL	NetCalifornia Mutual Aid Laboratory Network
CASGEM	California Statewide Groundwater Elevation Monitoring
CASQA	California Association of Storm Water Quality Agencies
CAWSI	California Agricultural Water Stewardship Initiative
CBSC	California Building Standards Commission
CCC	California Coastal Commission
CCLU-IN	Climate Change, Land Use, and Infrastructure Working Group
CCR	California Code of Regulations
CCUF	crop consumptive use fraction
CCWD	Contra Costa Water District
CDFA	California Department of Food and Agriculture
CDPH	California Department of Public Health
CEAP	Natural Resources Conservation Service Conservation Effectiveness Assessment Program
CEC	California Energy Commission

CEC	cation-exchange capacity
CEC	constituents of emerging concern
CEQA	California Environmental Quality Act
CERC	Crisis and Emergency Risk Communication
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CFS	cubic feet per second
CII	Commercial, Institutional, and Industrial
CII Task Force	Commercial, Industrial, and Institutional Task Force
CIMIS	California Irrigation Management Information System
CLCA	California Landscape Contractors Association
CO <sub>2</sub>	carbon dioxide
COG	Regional Councils of Government
CPUC	California Public Utilities Commission
CRAE	California Roundtable on Agriculture and the Environment
CRWQMP	California Rangeland Water Quality Management Plan
CSBC	California Building Standards Commission
CSMW	California Coastal Sediment Management Workgroup
CUWCC	California Urban Water Conservation Council
CVC	Cross Valley Canal
CVFPP	Central Valley Flood Protection Plan
CVHM	Central Valley Hydrologic Model
CVJV	Central Valley Joint Venture
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
CVWD	Coachella Valley Water District
CWA	Clean Water Act
CWC	California Water Code
CWP	California Water Plan
CWS	community water systems
CWSRF	Clean Water State Revolving Fund
DBP	disinfection by-products
Delta	Sacramento-San Joaquin Delta
Delta Reform Act	Sacramento-San Joaquin Delta Reform Act of 2009
DF	delivery fraction
DFW	California Department of Fish and Wildlife
DHCCP	Delta Habitat Conservation and Conveyance Program
DLRP	Division of Land Resource Protection
DMMs	demand management measures
DNAPLs	dense non-aqueous phase liquids
DOC	California Department of Conservation
DU	distribution uniformity
DWR	California Department of Water Resources
DWSAP	Drinking Water Source Assessment and Protection Program
DWSRF	Drinking Water State Revolving Fund
EAD	expected annual damage
EBMUD	East Bay Municipal Utility District
EC	electrical conductivity
EGPR	Environmental Goals and Policy Report
EIR	environmental impact report
EIR/EIS	environmental impact report/environmental impact statement
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
EQUIP	Natural Resources Conservation Service Environmental Quality Incentives Program



ERG	Expense Reimbursement Grant Program
ESA	Endangered Species Act
ET	evapotranspiration
ETAF	evapotranspiration adjustment factor
ETo	reference evapotranspiration
EWA	environmental water account
EWMPs	efficient water management practices
EWQSK	Emergency Water Quality Sample Kit
FEMA	Federal Emergency Management Agency
FESSRO	FloodSAFE Environmental Stewardship and Statewide Resources Office
FPR	forest practice rules
FRWP	Freeport Regional Water Project
GAMA	Groundwater Ambient Monitoring and Assessment Program
GDA	grassland drainage area
GHG	greenhouse gas
GIS	geographic information system
GPCD	gallons per capita per day
GPF	gallons per flush
GPM	gallons per minute
GPS	global positioning system
HAA5	haloacetic acids
HCD	Department of Housing and Community Development
HCP	habitat conservation plan
HET	high-efficiency toilet
HFI	Healthy Forest Initiative
HMP	Cal EMA Hazard Mitigation Program
HSEEP	Homeland Security Exercise and Evaluation Program
IACC	Interagency Coordinating Committee
IAP2	International Association of Public Participation
IDSP	In-Delta Storage Project
IFDM	integrated on-farm drainage management
IID	Imperial Irrigation District
IPCC	Intergovernmental Panel on Climate Change
IRWM	integrated regional water management
IRWMP	integrated regional water management plan
IWA	International Water Association
IWM	integrated water management
IWRIS	Integrated Water Resources Information System
kW	kilowatt
LADWP	Los Angeles Department of Water and Power
LAFCO	Los Angeles County Flood Control District
LAFCO	Local Agency Formation Commission
LEED	Leadership in Energy & Environmental Design
LGA	local groundwater assistance
LHMP	local hazard mitigation plan
LID	low-impact development
LNAPL	light, non-aqueous phase liquids
LRMP	land and resource management plan
LRN	Laboratory Response Network
LTMS	Long-Term Management Strategy for the Placement of Dredged Sediment in the San Francisco Bay Region
LVE	Los Vaqueros Reservoir Expansion
maf	million acre-feet
maf/yr	million acre-feet per year
MAGPI	Merced Area Groundwater Planning Initiative
MCL	maximum contaminant level

mg/L	milligrams per liter
MGD	million gallons per day
MM	management measures
MOU	memorandum of understanding
MP	management practice
MPO	Metropolitan Planning Organization
MPRSA	Marine Protection, Research, and Sanctuaries Act
MTBE	methyl tertiary butyl ether
MUN	drinking water
MW	megawatt
MWD	Metropolitan Water District of Southern California
MWELO	Model Water Efficient Landscape Ordinance
NAHC	Native American Heritage Commission
NCAR	National Center for Atmospheric Research
NCCP	Natural Community Conservation Plan
NCWA	Northern California Water Association
NEPA	National Environmental Policy Act
NFIP	FEMA National Flood Insurance Program
NFP	National Fire Plan
NL	notification level
NOAA	National Oceanic and Atmospheric Administration
NODOS	North-of-the-Delta Offstream Storage
NOI	notice of intent
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NPS	National Park Service
NRC	National Research Council
NRCS	Natural Resource Conservation Service
NTNC	non-transient non-community water systems
O&M	operations and maintenance
OHV	off-highway vehicle
OMRR&R	operation, maintenance, repair, rehabilitation, and replacement
OPR	Governor's Office of Planning and Research
OWTS	on-site wastewater treatment systems
PAW	productivity of applied water
PCB	polychlorinated biphenyls
PCE	perchloroethylene
PG&E	Pacific Gas and Electric Company
PHG	public health goal
PIER	Public Interest Energy Research Program
PL	projection level
PM&E	protection, mitigation, and enhancement
POE	point-of-entry
POTW	publicly owned treatment works
POU	point-of-use
PPCP	pharmaceuticals and personal care products
PPL	project priority list
ppm	parts per million
PRO	industrial processing
PSP	proposal solicitation packages
PWS	public water systems
QSA	Quantification Settlement Agreement
RAP	Regional Acceptance Process
RCD	Resource Conservation District
RDI	regulated deficit irrigation
RHNA	regional housing needs assessment

RMS	resource management strategy
RO	reverse osmosis
ROD	Record of Decision
RRA	Reclamation Reform Act of 1982
RSM	regional sediment management
RTP	regional transportation plan
RTPA	Regional Transportation Planning Authorities
RWMG	Regional Water Management Group
RWQCB	Regional Water Quality Control Board
SARI	Santa Ana River Interceptor
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SB X7-7	Water Conservation Act of 2009
SCADA	supervisory control and data acquisition systems
SCS	Sustainable Communities Strategies
SCWA	Sacramento County Water Authority
SDWA	California Safe Drinking Water Act
SFPUC	San Francisco Public Utilities Commission
SGC	Strategic Growth Council
SJRIP	San Joaquin River Water Quality Improvement Project
SLC	California State Lands Commission
SLWRI	Shasta Lake Water Resources Investigation
SMP	California Coastal Sediment Management Plan
SMUD	Sacramento Municipal Utility District
SMURRF	Santa Monica Urban Runoff Recycling Facility
SOM	soil organic matter
SRS	System Reoperation Study
SWAMP	Surface Water Ambient Monitoring Program
SWP	State Water Project
SWRCB	State Water Resources Control Board
taf	thousand acre-feet
taf/yr	thousand acre-feet per year
TCE	trichloroethylene
TDS	total dissolved solids
TEW	Global Terrorism Early Warning Groups
THP	timber harvesting plan
TLDD	Tulare Lake Drainage District
TMDL	total maximum daily load
TTHM	trihalomethanes
TWUF	total water use fraction
UCCE	University of California Cooperative Extension
ULFT	ultra low-flow toilet
Update 2009	<i>California Water Plan Update 2009</i>
Update 2013	<i>California Water Plan Update 2013</i>
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USDA Forest Service	U.S. Department of Agriculture Forest Service
USGS	U.S. Geological Survey
USJRSBI	Upper San Joaquin River Basin Storage Investigation
UST	underground storage tank
UV	ultraviolet
UWMP	urban water management plan
VAW	value of applied water
VMT	vehicle miles traveled
VOC	volatile organic compound

VSAT	Vulnerability Self-Assessment Tool
Water Bank	2009 Drought Water Bank
WDR	waste discharge requirements
WET	Waste Extraction Test
WHEAT	Water Health and Economic Analysis Tool
WISE	Water Infrastructure Security Enhancement
WMCP	Water Management Certification Program
WMF	water management fraction
Yuba Accord	Lower Yuba River Accord